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CONTROLLING PARASITES OF SWINE IN SOUTHERN GEORGIA.

How a Boy, Enrolled in Vocational
Agriculture in Southern Georgia,
Used the Parasite-Control Plan
in Producing a Litter of Pigs.

by

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FOREWORD

In the last few years valuable information dealing with the control of certain parasites of swine prevalent in southern Georgia has been obtained as a result of the work of the Zoological Division of the Bureau of Animal Industry, U. S. Department of Agriculture. No complete official report of the findings has yet been published.

In order that pupils of vocational agriculture may profit from the facts of the findings, the following story of how James Cotton, a tenant farm boy of Colquitt County, produced a litter of pigs and protected them from the damages of parasites (using preventive measures developed by the Bureau of Animal Industry) is given in the following pages.

In this story technical terms and technical discussions have purposely been avoided. Only the very practical phases are discussed. References listed at the end of the paper give information dealing with the life cycle of parasites, technical information, etc. No attempt has been made to discuss at length any problems dealing with the production of hogs except the control of certain internal parasites.

It is hoped that the indomitable will and stick-to-it-iveness of James Cotton will point the way to other vocational boys who would like to grow hogs the new way.

HOW JAMES COTTON GREW A LITTER OF PIGS FREE FROM DAMAGING PARASITES.

When James Cotton decided to purchase a sow and grow a litter of pigs as his animal project, like most other boys who study vocational agriculture, he wanted to use the best known practices -- practices that would give him quality pigs for market and the greatest net income.

With money he had saved from working on Saturdays, James bought a purebred Duroc-Jersey gilt. He had learned that good, blooded animals are more profitable than scrubs.

While feeding and caring properly for his gilt during the gestation period, James was also studying what preventive measures he must carry out in order to protect his pigs from certain internal parasites.

With his teacher and other members of the vocational class who were growing hogs, he visited the zoological laboratory of the U. S. Department of Agriculture which is located at a large packing plant in Moultrie, Georgia. James and his fellow classmates learned from Dr. H. B. Raffensperger, representing the Bureau of Animal Industry, U. S. Department of Agriculture, who is in charge of the work of the Zoological Division at Moultrie, many interesting and important facts essential if one is to attempt to grow hogs free from damaging parasites. He also learned from the records kept by the packing company the extent to which the ordinary run of hogs in southern Georgia are affected by parasites.

Dr. Raffensperger pointed out to James and his classmates that, from the study of hog parasites which has been carried on at Moultrie for the past 6 years, investigators are convinced that four of these parasites are causing the greatest damage to the swine industry of Georgia and the South.

"These four", he stated, "are lung worms, kidney worms, nodular worms, and roundworms." Dr. Raffensperger then discussed with James and the other boys the damage caused by each of these parasites, how hogs get them into their systems, and control measures for them.

Lung Worms.

"It has been determined that the only way hogs can get lung worms," stated Dr. Raffensperger, "is from eating earthworms -- common fish bait." He then asked this question, "Where do we find the earthworm?"

James or one of his associates replied; "In low, moist ground, usually swamps."

"Then how can we prevent pigs getting lung worms?"

"By keeping them out of swamps or off low, moist ground where earthworms are prevalent," was the ready reply.

Dr. Raffensperger pointed out that lung worms cause pigs to be unthrifty. Pigs with lung worms will not grow rapidly or respond to feed, which greatly increases the unit cost of production.

Kidney Worms.

"Kidney-worm eggs are passed out in the urine of the sow." stated Dr. Raffensperger, "and almost all sows in the South are infested with kidney worms and will be passing kidney-worm eggs." "These eggs," he continued, "under favorable conditions -- in a warm climate and in shady places -- will soon develop into the larval stage, and if protected may live two months or more. These larvae are actually very small, young kidney worms. It is in this larval stage that the young pig takes them through the mouth or the broken skin into the system.

"If the eggs are deposited on dry soil with no corn husks, grass, or similar things to protect them, and in places where they are exposed to the direct rays of the sun, they will not live 30 minutes."

"What steps, then," asked Mr. Walters, the teacher, "must be taken to control these kidney worms?"

After some thought and discussion, one boy remarked, "Place the sow on new ground where hogs have not been for some time just before she farrows."

"That's good," replied another boy, "but how are you going to protect young pigs from the eggs deposited by the sow?" This, of course, was a fair question, since it had already been stated that practically all sows pass kidney-worm eggs in their urine.

"The fact that pigs may become infested with kidney worms, as well as certain other parasites, from the sow," replied Dr. Raffensperger, "is why we advise that all husks, grass, etc., be kept removed from around the feeding pen, barrel waterer, etc., as you will see when we visit the set-up for carrying out the parasite-control plan." (A drawing of this set-up is shown on page 10.)

"This also accounts for the fact that we recommend that pigs be fed in a pen or creep where the sow is never permitted to go."

"Furthermore, it accounts for the fact," he continued, "that we advise a separate feeding pen for the sow where the pigs are never permitted to go, and advise that the sow be kept in it one and one-half hours in the early morning and the same length of time in the afternoon. We have found from close observation that if a sow is kept up one and one-half hours in the early morning and the same length of time in the late afternoon, the emptying of the bowel and bladder will usually take place during these periods, with the result that most of the kidney-worm eggs, roundworm eggs and nodular worm eggs (which will be mentioned later) that are passed from the sow cannot come in contact with the pigs. Keeping the sow in the pen for a part of the mornings and evenings is a very important part of the parasite-control plan," Dr. Raffensperger stated. "Keep the sow's feeding pen clean, so she will not carry feces out on her feet."

Just at this point in the discussion with James and his fellow students, Dr. Raffensperger telephoned the packing establishment and asked this question: "What per cent of the kidneys of the hogs received here at the Moultrie plant may be used for human food?" The reply came back, "About five per cent". With this reply also came this information, "We not only lose the kidneys for human food, but also lose an average of one-half pound of leaf lard per hog. The kidney worm also causes the loss of around 75 per cent of the livers of the general run of hogs slaughtered at Moultrie, since these livers are unfit for food."

Dr. Raffensperger then explained that less than 25 per cent of the livers of hogs grown under conditions recommended for the control of parasites are unfit for human consumption, and that more than 75 per cent of the livers from sanitation hogs are salvaged for human food.

Dr. Raffensperger then showed the boys the records of the herds where the parasite-control plan has been carried out. Almost 100 per cent of the hogs butchered from these farms showed no damages from kidney worms.

NODULAR WORMS

"Nodular worm eggs are passed from the sow in manure and soon hatch into the infective larvae", Dr. Raffensperger stated.

"This parasite," he continued, "does serious damage to the large intestines of the hog, making them unfit as casings for human food products."

It was pointed out that the system that controls the kidney worm also controls the nodular worms, that is, maintaining clean, dry soil around the farrowing pen and barrel waterer, and separate feeding pens for sow and pigs.

ROUNDWORMS

In discussing the roundworm with the boys, Dr. Raffensperger stated: "In many respects the larval roundworm is one of our most serious parasites, so far as damage to pigs is concerned."

"Pigs become infected with it in the same manner that they do with nodular worms, except with roundworms they pick up the embryonated eggs (which are eggs with small worms developed inside the egg shell) instead of the larvae. These embryonated eggs hatch out in the intestines of the pig. This parasite does its greatest damage to young pigs. At a certain stage roundworms enter the lungs of pigs. This often causes 'thumps', a disease which kills large number of pigs. Pigs that survive the attack of roundworms are usually unthrifty and will not respond to feed.

"The method used for controlling the nodular worms and lung worms will also control roundworms."

OTHER PARASITES

Continuing the discussion, Dr. Raffensperger mentioned the fact that there are other parasites in southern Georgia that attack hogs to some extent, but that the control measures for the four discussed are apparently rigid enough to hold the others in check.

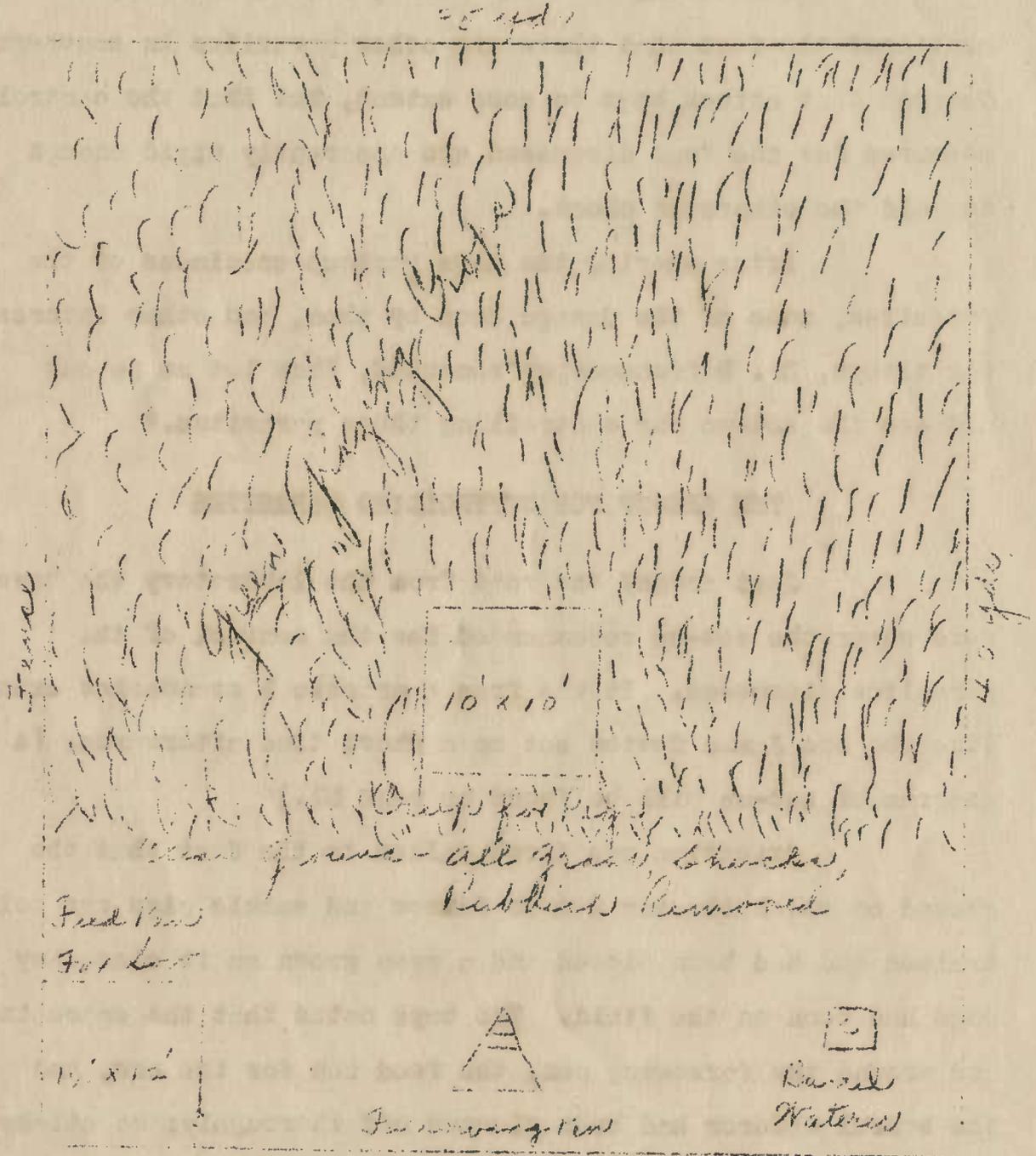
After showing the boys various specimens of the parasites, some of the damage done by them, and other interesting things, Dr. Raffensperger remarked, "Now let us go out and see the set-up for controlling these parasites."

THE SET-UP FOR CONTROLLING PARASITES

Just across the road from the laboratory the boys were shown the set-up recommended for the control of the parasites discussed. It was from a practical standpoint exactly like the one James Cotton set up a short time afterwards. (A diagram of set-up will be found on page 10.)

Attention was first called to the fact that the ground on which the sow was to farrow and suckle pigs was well drained and had been plowed and a crop grown on it since any hogs had been on the field. The boys noted that the space in and around the farrowing pen, the feed pen for the sow, and the barrel waterer had been cleaned off thoroughly; no sticks, grass or trash of any kind were present.

"This", explained Dr. Raffensperger, "was done to destroy all protection to the kidney worm larvae and the eggs of other worm parasites."



SET UP FOR CONTROLLING HOG PARASITES

EQUIPMENT FOR FARROWING PENS

They next examined the equipment for farrowing pens. The farrowing pen was of the A type with no floor on it. (A drawing of one is shown as part of this paper on page 17.) It was built on skids so that it could be moved to new ground. The barrel waterer was also placed on skids so that it might be moved. It was also arranged so that it would keep fresh water in the drinking compartment at all times. The feeding pen for the sow was built in the corner of the fence; thus only two sides had to be constructed. The creep or feed pen for pigs was located out on the land devoted to green grazing crops, away from the other equipment. The hole for the pigs to enter the creep was high enough so that pigs could enter without bending their backs.

FURTHER STUDY

The study of the layout or set-up for controlling parasites ended the trip to the zoological laboratories for the time being, but it did not end the study of controlling hog parasites for James Cotton. Under the direction of his teacher, he studied everything he could find concerning parasite control. A number of bulletins and references listed at the end of this paper were read and studied by James.

OTHER PROBLEMS

Though James had a fair knowledge of how hog parasites may be controlled, he had a number of problems to solve before

he could grow to marketable size a litter free from damaging parasites. But what James did can be done by any boy who has the stuff in him that makes one stick, and stick until a task is completed.

In the first place, James had no money to purchase lumber for a farrowing pen, and the feed pen for sow and pigs, nor money to buy fencing to keep pigs separate from other hogs, but this didn't stop him. He began to look for some way to get these necessary materials without money.

He picked up enough waste lumber, poles, old discarded tin roofing, sacks, etc., to construct the farrowing pen, creep, base for barrel waterer, and feed pen for sow.

His next problem was to get wire for cross fences. At one time it looked like his plans would fall through. He just couldn't seem to find any fence wire to use. Finally, after much worry and searching, he found some wire down in a swamp that could be removed and used. It wasn't very good wire and was awfully hard to cut out of the trees in the swamp, but James didn't mind this -- he had started out to do something and he didn't mean to be stopped.

The wire was removed from the swamp, the holes in it were patched, and cross fences constructed. One dollar was secured in some way and James purchased a barrel -- the only money he spent for any of his equipment.

James was now ready to grow a litter of pigs free from injurious parasites. The sow was placed in the new quarters a few days before farrowing time. It was not necessary

to wash her, as her udder and teats were not covered with mud and dirt, as is often the case if sows are allowed to run in swamps, which was not the case here.

GROWING THE PIGS

James' sow farrowed eight pigs -- one of which was dead. By proper care at farrowing and close watch while young, seven pigs were grown to marketable size. There wasn't a runt among the seven.

The rigid program for controlling parasites which has been mentioned was followed. The sow and pigs were never allowed to eat together; the ground around the barrel waterer, farrowing pen, and feed pen for the sow was kept free from shucks, grass or other rubbish. The sow was kept in her pen for one and one-half hours each morning and the same length of time late each afternoon.

The pigs were weaned at eight weeks of age and placed on new ground where green grazing had been provided. The sow was moved to a separate field at this time.

Though the pigs were changed from one field to another several times before they were marketed, not once were they allowed to go into the swamps or to run on contaminated land, land used recently by other hogs.

"This is a point in the control plan which is of great importance," said Dr. Raffensperger in discussing the matter. "Some seem to have the idea that after pigs are three or four months old they are not susceptible to parasites. This

is not true. Though it is true that the roundworm doesn't seem to do very much, if any, damage to pigs after they are three or four months old, if they have been protected up to this age, it does not hold true with the lung worm, kidney worm or nodular worm. A pig may be infected with these parasites and considerable damage done at any age."

Since the control plan called for keeping pigs off contaminated soil from the time they were farrowed until marketed, James kept them off. It was quite a task at times. He not only had to keep his pigs in certain fields, but he had to keep other hogs from getting in with his. This was the hardest job, as stray, hungry hogs will go through almost any fence.

ANOTHER LITTER

Five days after James' sow farrowed, another litter was farrowed on the same farm. The two litters were sired by the same boar, but they were raised and fed differently. The younger litter was allowed to run in swamps and in contaminated hog lots. The pigs became infested with parasites.

When the litter that was protected from parasites was 4 months and 25 days old the pigs averaged 118 pounds each; when the litter that was not protected was 4 months and 20 days old, they averaged 23 pounds each, a difference of 95 pounds in weight and only five days' difference in age.

The two litters were weighed and compared again later. The protected litter at 6 months and 11 days averaged 170.7 pounds each, and the unprotected litter at 6 months and 6 days averaged 28 pounds each, a difference of 142.7 pounds each in the pigs of the two litters.

The litter free from parasites was ready for market. The infected litter was not and would eat many more bushels of corn before it would be. James' hogs brought almost a cent per pound above the market price because they were of superior quality and free from parasites.

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